

Remarks

The Examiner should reconsider the present rejection of pending claims 16-19, 21, 24-26 and 28-33 in light of the present amendments and remarks.

Section 112

Claims 16-19, 21, 24-26 and 28-33 were rejected under Section 112 as not being supported in the specification. The applicant notes that there is some support in the specification for claims 16 and 21 method directed to targets that are not erythrocytes. Specifically, on page 9 of the specification, the third paragraph on the page begins "Different cells (cells of connective tissue, epithelial cells, pancreatic cells - adherent cells as well as cells in suspension) are pulled or pushed upon by the optical tweezer, the erythrocytes acting as force transducers." This implies that the target cells are "different" from the auxiliary objects (e.g. the erythrocyte).

To make this even more clear, the applicant has specified that the target cell is a cell that is "potentially cancerous". This is fully supported by the applicant's specification in the last paragraph of page 10. The applicant also notes that this would exclude erythrocytes, which lack and nucleus, do not reproduce, and are not potentially cancerous. Given this amendment, the rejection under Section 112 should be withdrawn.

Section 103

The only remaining issue is whether the claims being examined are rendered obvious by one or more prior art

references. In making an obviousness rejection, the Examiner must first determine the scope and content of the prior art, ascertain the differences between the prior art and the claims in issue, and resolve the level of ordinary skill in the art. Graham v. John Deere 148 USPQ 459 (1966).

The Claim Limitations are not found in the cited References

In order to establish a *prima facie* case of obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. In re Royka, 180 USPQ 580 (CCPA 1974).

A review of the cited art reveals that elements of the amended claims are simply not disclosed in the cited references.

As noted above, all claim limitations must be shown for a claim to be rendered obvious. At least one claim step in the examined claims is not found in the cited references, namely the adhering at least one target cell that is potentially cancerous at least one auxiliary object (e.g. an erythrocyte).

The Office action states "Bronkhorst also conducts comparative experiments carried out in the presence of other macromolecules [p. 257, col. 2], which suggests the use of other cells in experimentation." In fact, this section of the cited reference makes no such suggestion.

First, it simply is not factual that the presence of macromolecules suggests the presence of cells. A macromolecule need not even be organic. The specific section of the cited reference lists the macromolecules in Table 1. The macromolecules are plasma (the component of blood not including cells), PBS (buffered saline), serum (plasma without fibrinogen, again not including cells), fibrinogen (a glycoprotein), albumin (another protein), dextran T40 (a polysaccharide) and PVP (polyvinylpyrrolidone, a water soluble

polymer). All of these do not contain cells. This is entirely consistent with rest of the reference (including the summary, the first paragraph, and repeated throughout) that this reference is specific to the study of red cells. This cited sentence, rather than "suggests the use of other cells" this reference effectively teaches away from such a practice.

The additional cited references also do not teach what is claimed by the applicant, namely adhering to a target cell (as limited in the applicant's claims) at least one auxiliary object. Kas simply teaches an optical stretcher to deform cells. The Background of Invention Section and the beginning of the Detailed Description does note that various cells may be studied by the disclosed optical stretcher. However nothing is disclosed which would teach adhering an auxiliary object to a target cell, as claimed by the applicant.

Similarly, the Endlich reference also fails to disclose this central claimed step: adhering an auxiliary object to a target cell. Instead, what this reference discloses is the study of individual cell types, such as podocytes, epithelial cells and fibroblast cells, by using magnetic beads. Again, not only is the claimed step not taught, but the disclosure of beads as the force transfer element actually teaches away from the instant claims.

A fourth reference, Visscher is cited only with regard to claims 18 and 29. It also does not remedy this missing teaching not found in the cited references.

Given the claimed steps are simply not found in the cited reference (considered either alone or in combination), this rejection should be reconsidered and withdrawn.

No Proper Teaching to Combine

Even where all elements found in the cited reference, this rejection would still be improper because

there is no teaching to combine the references. One of the basic requirements of a prima facie case of obviousness is that some teaching to combine the references must be preferred. See MPEP § 2143. In the recent KSR Int'l Co. v. Teleflex Inc. decision, the Supreme Court found:

"a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the art. Although common sense directs one to look with care at a patent application that claims as innovation the combination of two known devices according to their established functions, it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combining the elements in the way the claimed new invention does". 550 US _____ (2007).

The Federal Circuit has set out a number of useful guidelines for determining when there is no teaching to combine. If a proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. See MPEP § 2143.01 (V), In re Gordon, 221 USPQ 1125 (Fed. Cir. 1984). The Federal Circuit has also established that if the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the reference are not sufficient to render the claims obvious. In re Ratti, 123 USPQ 349 (CCPA 1959). KSR International Co. v. Teleflex Inc., 82 USPQ2d 1385 (US 2007) quoting United States v. Adams, 383 US 39, 40 [148 USPQ 479] (1966) "when the prior art teaches away from combining

certain known elements, discovery of a successful means of combining them is more likely to be nonobvious."

In the present proposed combination, the Office action reasons that the "motivation would have been to obtain comparative experimental results to determine cellular adhesion between different types of cells, as suggested by Bronkhorst [p. 257, Col. 2]." As noted above, Bronkhorst does not teach or even suggest or imply the adhesion of different types of cells. To the contrary, Bronkhorst teaches away from this practice, to focus exclusively on the binding of erythrocytes to one another and the macromolecules that influence this binding. This reference is solely directed to red cell aggregates (rouleaux) and this point is repeated in the summary and the introductory paragraphs. The cited reasoning is not sufficient to support the given combination. Indeed, if the proposed modification were made, it would make it more difficult for red cell aggregation to be determined, as other cells would likely interfere, and the measurement of the addition of the substances of table 1 would be complicated by the unknown effects of additional cells. Thus the proposed modification renders Bronkhorst unfit for its stated purpose of studying red cell aggregation and effects of substance on such red cell aggregation. Such a combination is not proper and should be withdrawn.

Further, it is also not proper to combine Bronkhorst with Kas. The reason given for this combination is "to better understand the unique mechano-sensitivity exhibited by podocytes, as suggested by Endlich [p. 420, col. 1] and to better understand how the cytoskeleton work, as suggested by Kas [col. 5, ¶ 1]." However, Endlich already has a disclosed (and presumed preferred) method of assay of mechano-sensitivity, and Kas already provides a disclosed (and presumably preferred) means of assay of cytoskeleton function. Rather than providing a motivation to combine, the cited

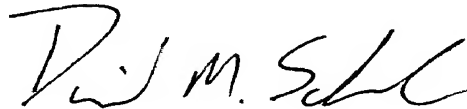
reasoning actually teaches away from making the cited combination.

The fourth cited reference, Visscher, does not remedy the failure to motivate the combination of Bronkhorst, Kas and Endlich. The lack of a teaching to combine provides a second, independent reason to reconsider the present rejection.

Conclusion

The applicant respectfully requests reconsideration in light of the submitted remarks and amendments. A notice of allowance is earnestly solicited. If any matter relating to this case needs to be discussed, please call our office at (408) 297-9733 between 9 a.m. and 5 p.m. Pacific time.

Respectfully submitted,



David M. Schneck

Reg. No. 43,094

Schneck & Schneck

P.O. Box 2-E

San Jose, CA 95109-0005

(408) 297-9733

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